UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,904	09/28/2001	J. G. Walacavage	200-0665	4251

7590 01/31/2006	EXAMINER
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ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/965,904	WALACAVAGE ET AL.
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 November 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/21/05*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 7-05)   Office Action Summary   Part of Paper No./Mail Date 20060124

DETAILED ACTION

Applicants' response of 21 November 2005 has amended claims 1, 9 and 15. Claims 1-15 have

been submitted for reconsideration. Claims 1-15 have been rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966),

that are applied for establishing a background for determining obviousness under 35 U.S.C. §

103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under

35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was

commonly owned at the time any inventions covered therein were made absent any evidence to

the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential

35 U.S.C. § 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

1.   Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

"Simulation and Production Planning for Manufacturing Cells" by Shahram Taj, David S.

Cochran, James W. Duda, and Jochen Linck (Taj) in view of "Emulation of a Material Delivery

System" by Todd LeBaron and Kelly Thompson (LeBaron).

Regarding claims 1-5, 8-12, and 15, Taj teaches a method of logical modeling operator

interaction [*"The LABOR element in Witness is used to represent the operator."* (page 975,

Modeling)] comprising the steps of:

Constructing a flowchart of interaction of an operator in a workcell using a computer [*"a*

medium sized cell was selected for further investigation. A schematic of this cell is shown in

Figure 2 [...] *Figure 3 shows the operator standard work chart for a medium sized cell."* (page

974, Cell Design) These figures (Figure 3 in particular) show the flowchart of interaction that is

constructed in the computer simulation: *"The new cell design was modeled in Witness. The*

LABOR element in Witness is used to represent the operator. [...] *For Operator Task 1 (Figure*

3)" etc. (page 975, Modeling)];

Testing whether logic of the flowchart is correct [*"The cell performance was to meet*

customer volume and mix requirements on a daily basis. The model was run for 10 weeks."

(page 977, from page 976, Simulation Run); *"The simulation results showed that not all part*

types can be produced in a JIT environment due to long set ups and downtimes. " (page 977,

Findings)]; and

Building the workcell if the logic of the flowchart is correct [*"The purpose of this study is*

to show how simulation can be used to examine the feasibility of converting an existing system to

a cellular manufacturing system"; *"management desired to replace the old equipment with*

machines using more modern technology"; *"An ideal, lean cell* [...] *would have all machines*

needed to process a part located very close together" (page 973, Introduction)].

Taj teaches starting a timer and determining whether the operator interaction is completed

within a predetermined time [Figure 3 shows the flowchart of interaction that is constructed in

the computer simulation: *"The new cell design was modeled in Witness. The LABOR element in*

Witness is used to represent the operator. [...] *For Operator Task 1 (Figure 3)"* etc. (page 975,

Modeling); Figure 3 shows the time for the operator interaction. OP 10 involves 8 seconds of

interaction (Take 2 part R from tub and load into OP 10 [8 sec.]) and 6 seconds of walking, etc.

Modeling this interaction necessitates a concept of timing in the simulation, ergo a timer.]

Taj teaches initializing the operator interaction [*"When the simulation starts, the operator*

position is zero. " (page 976, from page 975, Modeling)].

Taj teaches idling the operator prior to starting the timer [As disclosed (pages 975-976,

Modeling), the operator begins work and the timer starts at the beginning of the simulation.

Therefore the operator is inherently idle before the timer is started.].

Taj teaches constructing a series of commands for the operator using the computer

[Figure 3 shows the flowchart of interaction that is constructed in the computer simulation: *"The*

new cell design was modeled in Witness. The LABOR element in Witness is used to represent the

operator. [...] For Operator Task 1 (Figure 3)" etc. (page 975, Modeling)].

Taj does not expressly disclose modeling the operator interaction with *a programmable*

logic controller logical verification system. Taj discloses operators interacting with machines

[*"An operator with position zero is required for this machine during the cycle time"* etc. (page

975, Modeling)].

LeBaron teaches a programmable logic controller logical verification system [*"Routing*

logic, PLC or PC control software, sequencing algorithms, and more can be integrated, tested,

and debugged within a simulation environment." (page 1055, Abstract); *"Emulation provides*

the graphical and statistical output needed to accurately evaluate different algorithms and

control logic." (page 1060, Summary)].

It would have been obvious to a person of ordinary skill in the art to combine the concept

of emulating the PLC control software as taught by LeBaron with the modeling of operator

interaction taught by Taj to arrive at a simulation and verification system wherein both the

operator and the PLC control software is modeled. Motivation to do so is expressly taught by

LeBaron [*"Routing logic, PLC or PC control software, sequencing algorithms, and more can be*

integrated, tested, and debugged within a simulation environment." (page 1055, Abstract)]. The

combination embraces the advantages of both simulating operator interaction and debugging

PLC control software. The combination could be formed by interfacing the MACHINE

components of Witness (taught by Taj, page 975, Modeling) to the PLC control software

emulator (taught by LeBaron, page 1055, Emulation) so that the MACHINE components behave

according to their corresponding PLC control software.

Regarding claims 6-7 and 13-14, Taj discloses that the operator commands have at least

one resource and the resource has at least one capability [*"Load 2 P parts and 2 R parts pallet"*,

(Operator Task 6, Figure 3). This exemplary command requires a resource (*pallet*) that has a

capability (*capable of receiving 2 P parts and 2 R parts*).].

In response, Applicants argue primarily that:

Taj et al. does <u>not</u> disclose constructing a flowchart of interaction of an operator in a workcell using a
computer and testing the flowchart by a PLC logical verification system on the computer as to whether
logic of the flowchart is correct. Taj et al. also does <u>not</u> disclose using the flowchart to test PLC code.
Similar arguments are directed toward LeBaron et al.

And

[T]here is no suggestion or motivation in the art to combine Taj et al. and LeBaron et al. together.

The Examiner respectfully traverses these arguments as follows.

Taj clearly teaches constructing a flowchart of interaction of an operator in a workcell

using a computer [*"a medium sized cell was selected for further investigation. A schematic of*

this cell is shown in Figure 2 [...] *Figure 3 shows the operator standard work chart for a*

medium sized cell." (page 974, Cell Design) These figures (Figure 3 in particular) show the

flowchart of interaction that is constructed in the computer simulation: *"The new cell design was*

modeled in Witness. The LABOR element in Witness is used to represent the operator. [...] *For*

Operator Task 1 (Figure 3)" etc. (page 975, Modeling)].

Taj clearly teaches testing the flowchart as to whether the logic of the flowchart is correct
[*"The cell performance was to meet customer volume and mix requirements on a daily basis.
The model was run for 10 weeks."* (page 977, from page 976, Simulation Run); *"The simulation
results showed that not all part types can be produced in a JIT environment due to long set ups
and downtimes."* (page 977, Findings)].

Taj provides additional teachings of these limitations [*"Simulation analysis was used to
verify the cell design in terms of production feasibility. Process flows, actual and estimated
cycle times, change of times, maintenance repair data, machine downtimes, and work patterns
were used for the foundation of the simulation model. Standard work charts detailing the
required operator activities were also developed."* (page 975, Simulation Analysis)].

As set forth in the rejection, Taj does not expressly disclose modeling the operator
interaction with a programmable logic controller logical verification system.

LeBaron clearly teaches a programmable logic controller logical verification system
[*"Routing logic, PLC or PC control software, sequencing algorithms, and more can be
integrated, tested, and debugged within a simulation environment."* (page 1055, Abstract);
*"Emulation provides the graphical and statistical output needed to accurately evaluate different
algorithms and control logic."* (page 1060, Summary)].

Therefore the references, when combined as explained in the previous rejection, teach the
claimed invention.

Regarding Applicants' allegations that no motivation exists in the art to combine the
references, the Examiner refers to the motivation expressly set forth in the previous rejection.

Applicants' arguments have been fully considered but have been found unpersuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The

examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be

directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of

an application may be obtained from the Patent Application Information Retrieval (PAIR)

system. Status information for published applications may be obtained from either Private PAIR

or Public PAIR. Status information for unpublished applications is available through Private

PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

Jason Proctor
Examiner
Art Unit 2123

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Paul P. Rodriguez   1/28/06

Primary Examiner
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